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## Development of textile moisture sensors

In the field of intelligent textiles, there are various approaches for realizing sensors for different measured parameters. It is particularly interesting to provide the sensory function through the textile material itself without integrating additional electronic components. Such highly integrated solutions often have disadvantages in terms of the processability of the materials, scalability of production and reliability of the measured values.

The Cornet project Ambitex has therefore developed textile-integrated sensors that can overcome these disadvantages. Capacitive measuring methods are very easy to control in terms of data evaluation and provide more reliable measured values than resistive measuring methods can.

In order to be able to use this measurement method, various textile capacitors were developed whose common component is a dielectric that is adsorptive to water. Conductive prints and special conductive yarns were used as textile electrodes. The latter were designed as core-sheath structures in such a way that an insulated electrical conductor in the core was spun around with staple fibers. These yarns were used to successfully produce textile capacitors with very good reproducibility of the measured values, a low temperature coefficient and low sensitivity to mechanical stresses.

## **Project partners**

The project was carried out in cooperation with the University Institute for Textile Chemistry and Textile Physics at the University of Innsbruck, where textile-integrated thermal sensors were developed as part of the project.



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